Subchapter B : Design and Evaluation of Dams

§299.11. Classification of Dams.

All dams will be classified or reclassified as necessary to assure appropriate safety considerations. The three size classifications (small, intermediate and large), based on height of dam or impoundment capacity, and the three hazard classifications (low, significant and high), are combined to indicate a dam's downstream hazard potential. Thus, the classification assignment reflects the hazard potential associated with assumed failure of the dam. For example, dams located such that resulting failure could be catastrophic are classified so as to require a higher degree of design consideration than would be required for similar dams located in remote areas. Classification does not indicate the physical condition of a dam.

§299.12. Size Classification Criteria.

The classification for size based on the height of the dam or maximum reservoir storage capacity, shall be in accordance with Table 1 of this subsection. The appropriate size is the largest category determined for either storage or height.

TABLE 1
SIZE CLASSIFICATION

	Impoundment	
Category	Storage (Ac-Ft)	Height (Ft.)
Small	Less than 1000	Less than 40
Intermediate	Equal to or Greater than 1000 & less than 50,000	Equal to or Greater than 40 & less than 100
Large	Equal to or Greater than 50,000 than 100	Equal to or Greater

§299.13. Hazard Classification Criteria.

The hazard potential classification shall be in accordance with Table 2 of this subsection. Hazard classification pertains to potential loss of human life and/or property damage within either existing or potential developments in the area downstream of the dam in event of failure or malfunction of the dam or appurtenant facilities. Hazard classification does not indicate any condition of the dam itself. Dams in the low hazard potential category are normally those in rural areas where failure may damage farm buildings, limited agricultural improvements and county roads. Significant hazard potential category dams are usually those in predominantly rural areas where failure would not be expected to cause loss of human life,

but may cause damage to isolated homes, secondary highways, minor railroads, or cause interruption of service or use (including the design purpose of the facility) of relatively important public utilities. Dams in the high hazard potential category are usually those in or near urban areas where failure would be expected to cause loss of human life, extensive damage to agricultural, industrial or commercial facilities, important public utilities (including the design purpose of the facility), main highways or railroads.

TABLE 2
HAZARD POTENTIAL CLASSIFICATION

Category	Loss of Human Life	Economic Loss
Low	None expected (No permanent structures for human habitation)	Minimal (Undeveloped to occasional structures or agricultural improvements)
Significant	Possible, but not expected (A small number of inhabitable structures)	Appreciable (Notable agricultural, industrial or commercial development)
High	Expected (Urban development or large number of inhabitable structures)	Excessive (Extensive public, industrial, commercial or agricultural development)

§299.14. Hydrologic Criteria for Dams.

(a) The hydrologic criteria contained in Table 3 are the minimum acceptable spillway design flood (SDF) for proposed dams as defined in §299.1 of this title (relating to Definitions), including those to be constructed in accordance with Texas Water Code, §11.142.

(b) Exemptions to Minimum Hydrologic Criteria - Proposed low hazard dams exempt under Texas Water Code, §11.142 are exempt from the minimum criteria. Any other proposed structure may be exempt from the minimum criteria if properly prepared dam breach analyses show that existing downstream improvements or known or planned future improvements will not be adversely affected. A properly prepared breach analysis should include at least three events, the normal storage capacity non-flood event, the barely overtopping event and the PMF event. Data on additional flood magnitudes may be provided as necessary to document other conditions or conclusions. Downstream flooding differentials of one-foot or less between breach and non-breach simulations are not considered to be adverse.

TABLE 3
HYDROLOGIC CRITERIA FOR DAMS

Classification		
Hazard	Size	Minimum Flood Hydrograph
Low (No. 3)	Small	¼ PMF
	Intermediate	¼ PMF to ½PMF
	Large	PMF
Significant (No. 2)	Small	¼ PMF to ½ PMF
	Intermediate	½ PMF to PMF
	Large	PMF
High (No. 1)	Small	PMF
	Intermediate	PMF
	Large	PMF

NOTE: The flood hydrograph in this table is the minimum required flood for a given project, i.e., the project will be required to safely pass this hydrograph. Where a range is given, the minimum flood hydrograph will be determined by straight line interpolation within the given range. Interpolation shall be based on either hydraulic height or impoundment size (§299.12, Table 1 of this title (relating to Size Classification Criteria)), whichever is greater. The minimum flood hydrograph is computed as a percentage of the PMF hydrograph.

§299.15. Evaluation of Existing Dams.

(a) Existing dams, as defined in §299.1 of this title (relating to Definitions), are subject from time to time to reevaluation in consideration of continuing downstream development. Hydrologic criteria contained in §299.14, Table 3 of this title (relating to Hydrologic Criteria for Dams) are the minimum acceptable spillway evaluation flood (SEF) for reevaluating dam and spillway capacity for existing dams to determine whether upgrading is required. Dams not meeting minimum criteria are considered to be below acceptable limits and are subject to action as necessary under §299.2 of this title (relating to General).

(b) Exemptions from Minimum Hydrologic Criteria - Existing low hazard dams are exempt from the minimum hydrologic criteria as given in Table 3 and any other existing structure may be exempt from the minimum hydrologic criteria if properly prepared dam breach analyses show that existing downstream improvements or known or planned future improvements will not be adversely affected. A properly prepared breach analysis should include at least three events, the normal storage capacity non-flood event, the barely overtopping event and the PMF event. Data on additional flood magnitudes may be provided as necessary to document other conditions or conclusions. Downstream flooding differentials of one-foot or less between breach and non-breach simulations are not considered to be adverse.

(c) Structural Evaluation - Evaluating the structural condition of an existing dam includes, but is not limited to, visual inspections and evaluations of potential problems such as seepage, cracks, slides, conduit and control malfunctions and other structural and maintenance deficiencies which could lead to failure of a structure. An active and progressive deteriorating condition is sufficient for a finding that an existing dam is structurally inadequate.

§299.16. Interim Alternatives.

At the time the commission considers the permanent upgrading or removal of an inadequate dam, the dam owner may request the commission to consider interim alternatives including but not limited to temporary repairs, reservoir dewatering, insurance coverage, and/or downstream warning and evacuation plans. Consideration shall be given to the time required to overcome economic, physical and legal restraints to upgrading, the prospect of permanent repair, current use of the facility, degree of risk and public welfare.

§299.17. Emergency Management.

As required for emergency management planning, the executive director may request, and/or the commission may order a dam owner to provide sufficient data to plan for potential effects of failure or malfunction of a dam and/or associated appurtenant facilities.

§299.18. Variance.

The owner of an existing dam that does not meet the hydrologic criteria of §299.14, Table 3 of this title (relating to Hydrologic Criteria for Dams) may request the commission to consider a variance from this criteria, based upon but not limited to the owner's evaluation of the consequences of potential dam failure, proposals to reduce potential hazard, and/or the economic and physical limitations to upgrading.